Raytheon
Customer Success Is Our Mission

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Land
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Cyberspace

Innovation. In all domains.

Raytheon Parts Management

28 October 2008

Agenda

- Parts Management embedded within IPDS
- IPDS overview
  - IPDS Stages
  - IPDS Gates
- Parts Management activities by stage
- Summary
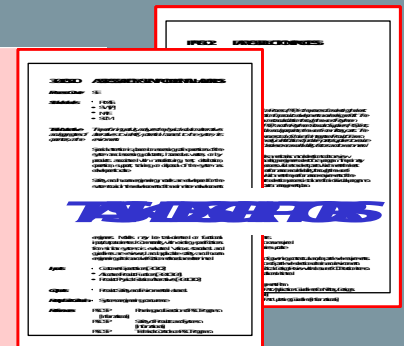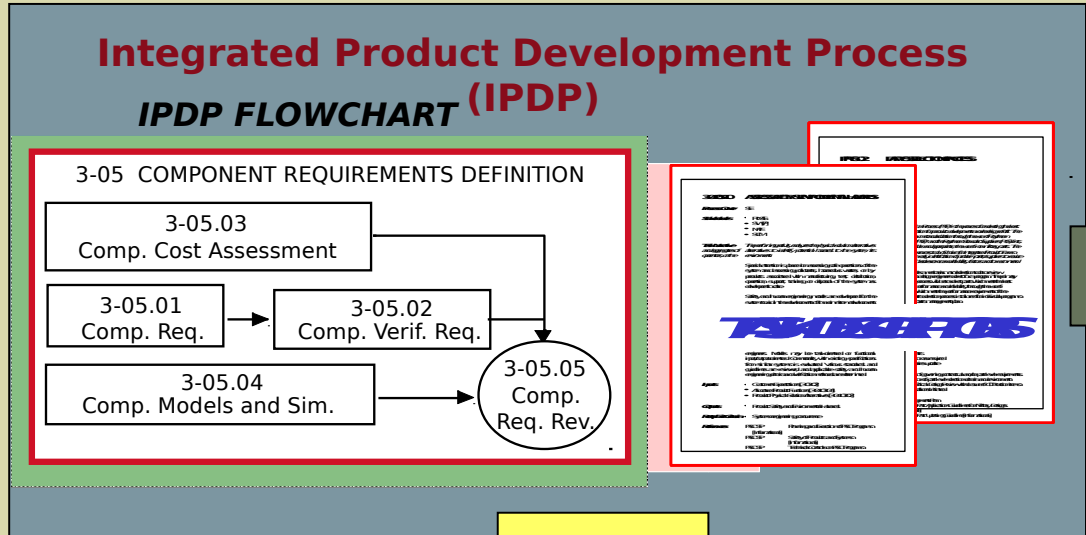
Parts Management - 30,000 Foot View

Parts Management is embedded within our Integrated Product Development System (IPDS)

- IPDS is a system of
  - Common processes
  - Process execution assets
  - Reference materials
  - Training materials
  - Deployment materials
  - Support resources

- IPDS serves as Raytheon's process framework for
  - Business capture and proposal development
  - Program planning and execution
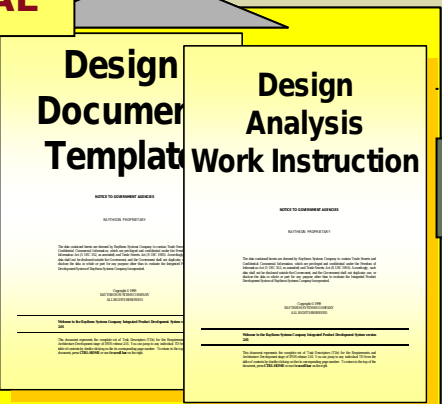 - Product development, manufacture and support

Structure of IPDS

ntegrated Product Development System (IPDS)

Integrated Product Development Process (IPDP)

IPDP FLOWCHART

3-05 COMPONENT REQUIREMENTS DEFINITION

- 3-05.03 Comp. Cost Assessment
- 3-05.01 Comp. Req.
- 3-05.02 Comp. Verif. Req.
- 3-05.04 Comp. Models and Sim.
- 3-05.05 Comp. Req. Rev.

RayPAL

Design Document Template

Design Analysis Work Instruction

(RayPAL – Raytheon Process Asset Library - Includes business / site Enablers)

IPDP Provides:
Common Process ("What"):

- **Flow Diagrams**
- **Connected I/O**
- **Gates and Reviews**
- **Task Descriptors**
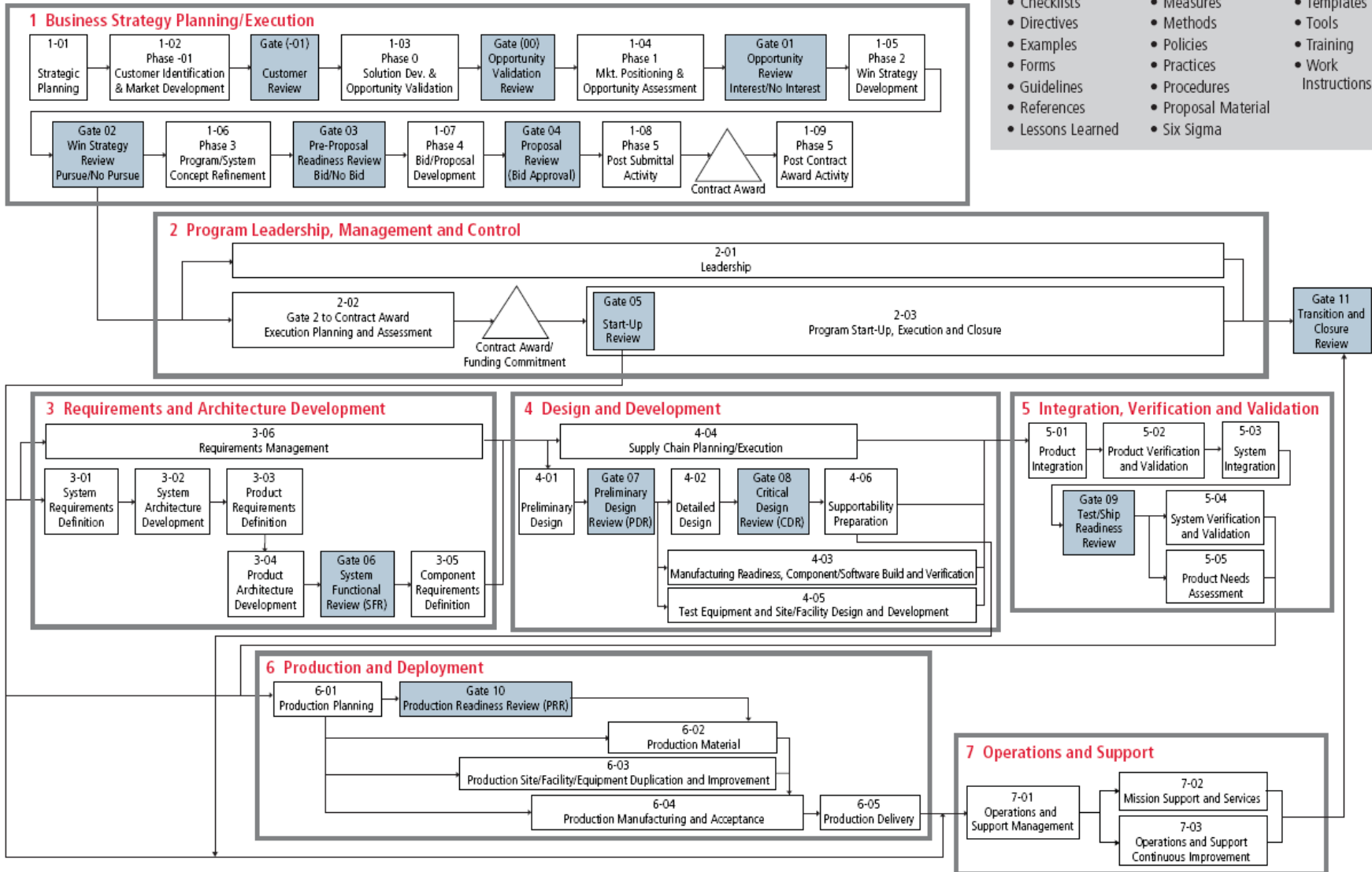- **Links to RayPAL**

RayPAL Provides:
Common & Local Process Materials ("How To"):

- **Checklists**
- **Templates**
- **Methods**
- **Work Instructions**
- **Guidelines**
- **Tools**
- **Etc.**

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IPDS Stages

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Seven Major Stages

IPDS stages organize the company process definition into logical groupings with key management decision gates interspersed throughout the life-cycle of a program.

-1 | 0 | 1 | 2 | 3 | 4

**– Stage 1 –
Business Strategy Planning /
Execution**

5 ... **11**

**– Stage 2 –
Program Leadership, Management, & Control**

6
**– Stage 3 –
Requirements &
Architecture
Development**

7
**– Stage 4 –
Design &
Development**

8

9
**– Stage 5 –
Integration,
Verification, &
Validation**

10
**– Stage 6 –
Production & Deployment**

**– Stage 7 –
Operations & Support**

Program Decision Gates
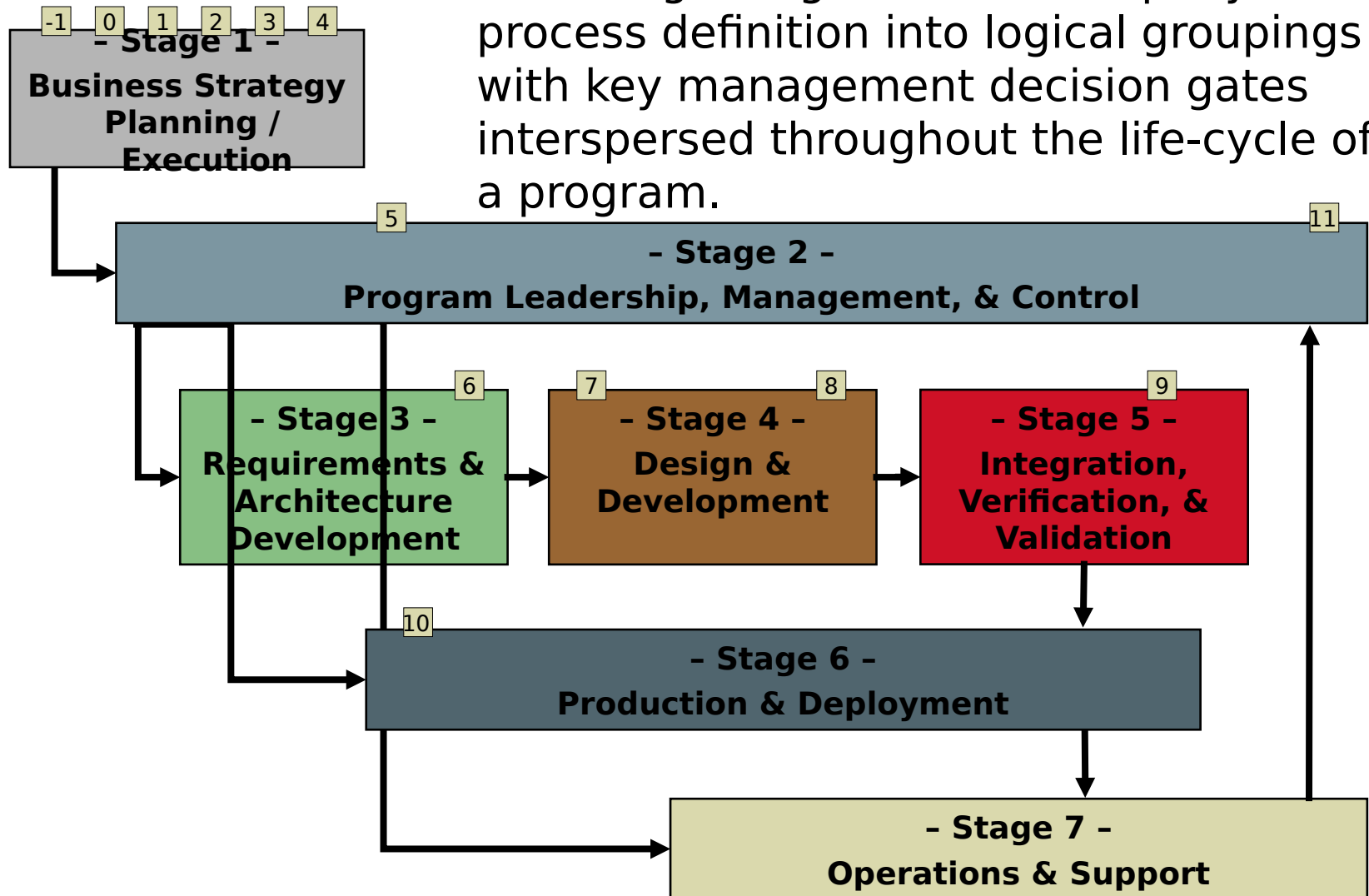
Program Level Decision Gates

Gate -1: Customer Review

Gate 0: Opportunity Validation Review ⬅

Business Decision Gates

Gate 1: Interest / No Interest

Gate 2: Pursue / No Pursue

Gate 3: Bid / No Bid

Gate 4: Bid Approval

Program Execution Gates

| -1 | 0 | 1 | 2 | 3 | 4 |

– 1 –
Business Strategy
Planning / Execution

Gate 5: Start-Up Review

Gate 6: System Functional Review

Gate 11: Transition and Closure Review

| – 2 – | 5 | Program Leadership, Management, & Control | 11 |

– 3 –
Requirements & Architecture Development | 6 |

– 4 –
Design & Development | 7 | 8 |

– 5 –
Integration, Verification & Validation | 9 |

– 6 – Production & Deployment | 10 |

– 7 – Operations & Support

Gate 7: Preliminary Design Review

Gate 8: Critical Design Review

Gate 9: Test / Ship Readiness Review

Gate 10: Production Readiness Review

| # | Program Decision Gates

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Program Execution Decision Gates

- Decision Gates are higher-level management assessments of program maturity and readiness to proceed to the next phase
  - Each Gate is preceded by an Independent Review (IR)
- An IR is a systematic evaluation of product and project maturity, which provides input to the Decision Gate
  - Each IR has a checklist of generic topics to be evaluated during the corresponding program phase
    - Gates 5 through 11 checklists include specific Parts Management assessment items

IRs verify PM tasking completion at key milestones

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Stage 1 & 2
Parts Management (PM)
Highlights

– 1 –
BUSINESS STRATEGY PLANNING / EXECUTION

– 2 –
PROGRAM LEADERSHIP MANAGEMENT & CONTROL

MAJOR PM ACTIVITIES

- ❑ Identify needed reuse components, based on common architecture and business needs
- ❑ Evaluate current / imminent technologies & develop technology roadmaps
- ❑ Prepare & characterize initial BOM & identify critical items

MAJOR PM ACTIVITIES

- ❑ Manage PM technical effort execution
    - ▪ Creation / maintenance of product development plans (e.g., Parts, Materials and Processes Plan)
    - ▪ Establish and maintain PM engineering databases and repositories
- ❑ Obtain product development plan approvals in accordance with program requirements
- ❑ Identify program execution risks due to obsolescence
- ❑ Monitor / measure PM progress against project plan

KEY PM OUTPUTS

- ❑ Reuse Component Development Plans
- ❑ Technology Roadmaps
- ❑ Material Program Strategy

KEY PM OUTPUTS

- ❑ Parts, Materials and Processes Plan
- ❑ Obsolescence Management Plan
- ❑ Tin Whisker Risk Mitigation Plan
- ❑ Obsolescence Analysis Reports

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Stage 3 & 4
Parts Management (PM) Highlights

– 3 – REQUIREMENTS & ARCHITECTURE DEVELOPMENT

MAJOR PM ACTIVITIES

- ☐ **Define parts, materials, and processes design approach & requirements**
  - ▪ **Design criteria, parts control requirements, parts testing requirements, etc.**
- ☐ **Perform system level obsolescence analysis**

KEY PM OUTPUTS

- ☐ **Parts Requirements**
- ☐ **Material and Process Requirements**
- ☐ **Obsolescence Analysis Report**

– 4 – DESIGN & DEVELOPMENT

MAJOR PM ACTIVITIES

- ☐ **Generate specifications for new parts, materials, and processes**
- ☐ **Update approved parts, materials, and process list**
- ☐ **Update non-standard parts list**
- ☐ **Perform obsolescence analysis**
- ☐ **Assess and qualify suppliers**

KEY PM OUTPUTS

- ☐ **Material Specifications**
- ☐ **Part Specifications**
- ☐ **Non-Standard Parts Approval Requests**
- ☐ **Approved Parts, Materials, and Process List**
- ☐ **Obsolescence Analysis Report**
- ☐ **Supplier Assessments**

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Stage 5, 6 & 7 Parts Management (PM) Highlights

– 5 – INTEGRATION, VERIFICATION & VALIDATION	– 6 – PRODUCTION & DEPLOYMENT	– 7 – OPERATIONS & SUPPORT

MAJOR PM ACTIVITIES

❑ Perform obsolescence analysis	❑ Perform obsolescence analysis	❑ Identify / implement product support driven engineering changes
❑ Assess BOM for cost effective / standardization replacement opportunities	▪ Identify alternatives / mitigation plans	
❑ Assist corrective action issues relating to test failures	❑ Assist corrective action issues relating to test failures	

KEY PM OUTPUTS

❑ Obsolescence Analysis Report	❑ Obsolescence Analysis Report	❑ Engineering Change Proposal
❑ Manufacturing Technology Assessment		❑ Provisioning Technical Data Package

Summary

- IPDS provides the framework within which our common parts management processes are integrated and deployed

- IPDS Stages organize processes into logical groupings
  - Each stage contains specific parts management functions

- Decision Gates & Independent Reviews ensure parts management processes have been satisfied
  - Proceed to next phase cannot occur without exit criteria resolution